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(017622-2017)

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of Brian D. Petry *et al.* Examiner: Liangche Wang

Serial No: 10/661,096 Art Unit: 2155

Filed: September 12, 2003 Confirmation No.: 6582

For: **SYSTEM AND METHOD FOR FACILITATING FAILOVER OF STATEFUL
CONNECTIONS**

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Commissioner for Patents

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RESPONSE AND AMENDMENT UNDER 37 C.F.R. 1.116

In response to the Final Office Action mailed August 6, 2007, Applicants submit the following Amendment and Remarks.

If extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required therefore (including fees for net addition of claims) are hereby authorized to be charged to our Deposit Account No. 50-1283.

A Listing of the Claims begins on page 2 of this paper.

Remarks begin on page 8 of this paper.

Amendments to the Claims:

This listing of claims will replace all prior versions and listing of claims in the above-identified application

Listing of Claims:

1 (Currently Amended). A method of facilitating failover of a stateful protocol connection from a proxy element to a standby proxy, the method comprising:

receiving, at the proxy element, data sent by a first external entity in accordance with a first stateful protocol connection;

withholding acknowledgment of receipt of the data at the proxy element until a predefined operation involving the data has been performed, said predefined operation being performed subsequent to the receipt of the data;

transferring state information relating to the first stateful protocol connection from the proxy element to a standby proxy; and

sending, from the proxy element, the acknowledgment of receipt to the first external entity subsequent to performance of the predefined operation involving the data.

2 (Original). The method of claim 1 wherein the predefined operation comprises committing the data to an application executing upon the proxy element and receiving a send acknowledgment command from the application.

3 (Original). The method of claim 1 wherein the predefined operation comprises:

sending, from the proxy element, the data to a second external entity; and

receiving, at the proxy element, a second acknowledgment that the data has been received at the second external entity.

4 (Original). The method of claim 3 wherein the sending of the data to the second external entity is performed in accordance with a second stateful protocol connection, the method

further including transferring state information relating to the second stateful protocol connection to the standby proxy.

5 (Original). The method of claim 1 further including failing over the first stateful protocol connection to the standby proxy.

6 (Original). The method of claim 4 further including failing over the second stateful protocol connection to the standby proxy.

7 (Original). The method of claim 1 further including:
transmitting, from the first external entity, the data to the proxy element and retaining a copy of the data; and
deleting the copy of the data upon receipt at the first external entity of the acknowledgment.

8 (Original). The method of claim 1 wherein the transferring of the state information is performed in accordance with an additional stateful protocol connection.

9 (Original). The method of claim 5 further including beginning servicing, at the standby proxy, the first stateful protocol connection from a last successful point of synchronization between the proxy element and the standby proxy.

10 (Original). The method of claim 1 further including detecting, at the standby proxy, failure of the first stateful protocol connection and initiating failover of the first stateful protocol connection from the proxy element to the standby proxy.

11 (Currently Amended). A method of facilitating failover of a stateful protocol connection, the method comprising:

receiving, at a primary system, data sent by a first external entity in accordance with the stateful protocol connection;

withholding acknowledgment of receipt of the data until a predefined operation involving the data has been performed;

transferring state information relating to the stateful protocol connection to a standby system; and

sending, from the primary system, the acknowledgment of receipt to the first external entity subsequent to performance of the predefined operation involving the data, said predefined operation being performed subsequent to the receipt of the data.

12 (Original). The method of claim 11 wherein the predefined operation comprises committing the data to an application and receiving a send acknowledgment command from the application.

13 (Original). The method of claim 11 wherein the predefined operation comprises:

sending the data to a host entity; and

receiving confirmation that the data has been received at the host entity.

14 (Original). The method of claim 11 further including failing over the stateful protocol connection to the standby system.

15 (Original). The method of claim 11 wherein the transferring of the state information is performed in accordance with an additional stateful protocol connection.

16 (Previously Presented). The method of claim 14 further including beginning servicing, at the standby system, the stateful protocol connection from a last successful point of synchronization between the proxy element and the standby system.

17 (Previously Presented). The method of claim 11 further including detecting, at the standby system, failure of the stateful protocol connection and initiating failover of the stateful protocol connection to the standby system.

18 (Currently Amended). A stateful protocol processing apparatus comprising:
a proxy element having a first protocol core and a second protocol core, the first protocol core supporting a first stateful protocol connection over which data is received from a first external entity wherein the proxy element is configured to withhold acknowledgment of receipt of the data until a predefined operation involving the data has been performed and to send the acknowledgment of receipt to the first external entity subsequent to performance of the predefined operation, said predefined operation being performed subsequent to the receipt of the data; and

a standby element to which state information relating to the first stateful protocol connection is transferred from the proxy element.

19 (Original). The apparatus of claim 18 wherein the predefined operation comprises committing the data to an application executing upon the proxy element and receiving a send acknowledgment command from the application, wherein the proxy element is further configured to send the acknowledgment of receipt to the first external entity subsequent to performance of the predefined operation.

20 (Original). The apparatus of claim 18 wherein the second protocol core is configured to support a second stateful protocol connection to a second external entity over which is transmitted the data and wherein the predefined operation comprises receiving, at the proxy element, a second acknowledgment that the data has been received at the second external entity.

21 (Previously Presented). The apparatus of claim 18 further including a switch disposed to failover the first stateful protocol connection from the proxy element to the standby element.

22 (Previously Presented). The apparatus of claim 21 further including a failure detection unit configured to detect failure of the first stateful protocol connection and to command the switch to initiate said failover, the standby element beginning servicing of the first stateful protocol connection from a last successful point of synchronization between the proxy element and the standby element.

23 (Previously Presented). The apparatus of claim 18 wherein the standby element includes memory in which is stored the state information relating to the first stateful protocol connection.

24 (Currently Amended). A method of facilitating failover of a stateful protocol connection, the method comprising:

receiving data sent by a first external entity in accordance with the stateful protocol connection;

transferring state information relating to the stateful protocol connection to a standby system;

withholding acknowledgment of receipt of the data until a predefined operation involving the data has been performed, the predefined operation being performed subsequent to the receipt of the data and including storing the state information in memory within the standby system, and

sending the acknowledgment of receipt to the first external entity subsequent to performance of the predefined operation involving the data.

25 (Previously Presented). The method of claim 24 wherein the predefined operation further comprises committing the data to an application and receiving a send acknowledgment command from the application.

26 (Previously Presented). The method of claim 24 wherein the predefined operation further comprises:

sending the data to a host entity; and

receiving confirmation that the data has been received at the host entity.

REMARKS

Claims 1-26 are pending in the application. By this Amendment Applicant has amended claims 1, 11, 18 and 24 in the manner discussed below.

Claim Objections

In response to the objection to claims 18-23, Applicant has amended claim 18 in the manner suggested by the Examiner.

Claim Rejections Under 35 U.S.C. §103

The Examiner has rejected claims 1, 2, 5, 8-12, 14-19 and 21-26 under 35 U.S.C. §103 as being unpatentable over Orman et al. in view of Rostowfske et al.

In the above Office Action the Examiner admits that Orman does not explicitly teach, among other things, withholding acknowledgment of receipt of the data at the proxy element until a predefined operation involving the data has been performed. However, the Examiner argues that:

...Rostowfske teaches, withholding acknowledgment of receipt of the data at the proxy element (Col 7 lines 26-35) until a predefined operation involving the data has been performed (the primary server (proxy element) will not return an acknowledge if the primary fails to complete operation)....

That is, the Examiner appears to argue that the act of receiving the data in the Rostowfske system corresponds to the claimed "predefined operation involving the data". In this regard Applicant respectfully submits that the data must be received before it can be manipulated in a predefined operation as presently claimed. However, even accepting for purposes of discussion the Examiner's position that receiving data corresponds to a predefined operation involving the data, the Examiner has not demonstrated how Rostowfske in any way withholds an acknowledgment of receipt of the data. Applicant respectfully submits that something may not be "withheld" if it does not yet exist. Clearly in the Rostowfske system an acknowledgment of receipt does not exist unless and until data has been received. So if an acknowledgment is incapable of existing in the Rostowfske system until the data has been received, then Rostowfske cannot and does not describe withholding such an acknowledgment since in the Rostowfske system such acknowledgment is sent immediately upon receipt of the data (i.e., there is no opportunity for

“withholding”, since there is nothing to “withhold” prior to receipt of the data). The Examiner’s statement that an acknowledgement is not sent in the Rostowfske system until data has been received in no way demonstrates the practice of the affirmative act of withholding an acknowledgment that could have been previously sent (since in the Rostowfske system an acknowledgement message cannot exist unless and until the data has been received).

Notwithstanding these distinctions between the claimed invention and Rostowfske, in order to advance prosecution of the application the independent claims have been amended to recite that the predefined operation involving the data is performed subsequent to the receipt of the data; that is, that the receipt of the data and the predefined operation comprise distinct operations. Rostowfske shows nothing other than receiving the data and sending an acknowledgment upon the receipt, and thus in fact teaches away from the invention as presently claimed by automatically sending an acknowledgment immediately upon the receipt of data and prior to otherwise processing the received data.

Accordingly, Applicant respectfully requests reconsideration of the outstanding rejection of claims 1, 2, 5, 8-12, 14-19 and 21-26 under 35 U.S.C. §103 as being unpatentable over Orman et al. in view of Rostowfske et al.

The Examiner has also rejected claims 3, 4, 6, 7, 13 and 20 under 35 U.S.C. §103 as being unpatentable over Orman et al. in view of Rostowfske et al and further in view of Serex et al. Because Serex does not remediate any of the deficiencies of Rostowfske with respect to the claimed invention described above, Applicant also requests reconsideration of claims 3, 4, 6, 7, 13 and 20.

Conclusion

Applicant respectfully requests consideration of the remarks herein prior to further examination of the above-identified application. The undersigned would of course be available to discuss the present application with the Examiner if, in the opinion of the Examiner, such a discussion could lead to resolution of any outstanding issues.

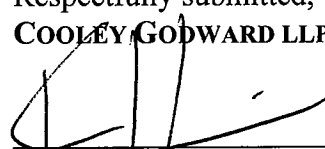
The Director is hereby authorized to charge any appropriate fees under 37 C.F.R. §§ 1.16, 1.17, and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 50-1283.

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